

CLAIMS

WE CLAIM:

1. An inoculum for application to plants, said inoculum comprising a carrier and an effective quantity of bacteria, the bacteria selected from *Herbaspirillum seropedicae* 2A (ATCC No. PTA-2742), *Pantoea agglomerans* P101 (ATCC No. PTA 2744), *Pantoea agglomerans* P102 (ATCC No. PTA 2740), *Klebsiella pneumoniae* 342 (ATCC No. PTA-2743), *Klebsiella pneumoniae* zmvsy (ATCC No. PTA-2741), *Herbaspirillum seropedicae* Z152 (ATCC No. 35894), *Gluconacetobacter diazotrophicus* PA15 (ATCC No. 49037) and mutant strains derived therefrom, said mutant strains able to enhance the growth of plants.
2. An inoculum for application to plants, the inoculum comprising a carrier and an effective quantity of a *Klebsiella pneumoniae* bacterial strain.
3. An inoculum for application to plants other than legume plants, the inoculum comprising a carrier and an effective quantity of a *Pantoea agglomerans* bacterial strain.
4. A biologically pure bacterial culture wherein the bacteria is selected from *Herbaspirillum seropedicae* 2A (ATCC No. PTA-2742), *Pantoea agglomerans* P101 (ATCC No. PTA 2744), *Pantoea agglomerans* P102 (ATCC No. PTA 2740), *Klebsiella pneumoniae* 342 (ATCC No. PTA-2743), and *Klebsiella pneumoniae* zmvsy (ATCC No. PTA-2741).
5. A biologically pure culture of a mutant strain, the mutant strain derived from either *Herbaspirillum seropedicae* 2A (ATCC No. PTA-2742), *Pantoea agglomerans* P101 (ATCC No. PTA 2744), *Pantoea agglomerans* P102 (ATCC No. PTA 2740), *Klebsiella pneumoniae* 342 (ATCC No. PTA-2743), or *Klebsiella pneumoniae* zmvsy (ATCC No. PTA-2741), wherein the mutant strain retains the ability to enhance the growth of plants.
6. A method for enhancing the growth of a plant, the method comprising the step of placing in the vicinity of the plant an effective quantity of bacteria, the bacteria selected from *Herbaspirillum seropedicae* 2A (ATCC No. PTA-2742), *Pantoea agglomerans* P101 (ATCC No. PTA 2744), *Pantoea agglomerans* P102 (ATCC No. PTA 2740), *Klebsiella pneumoniae* 342 (ATCC No. PTA-2743), *Klebsiella pneumoniae* zmvsy (ATCC No. PTA-2741), *Herbaspirillum seropedicae* Z152 (ATCC No. 35894), *Gluconacetobacter diazotrophicus* PA15 (ATCC No. 49037) and mutant strains derived therefrom, said mutant strains able to enhance the growth of plants.

7. The method of Claim 6 wherein the plant is either a cereal grass plant or a legume plant.

8. A method for enhancing the growth of a plant, the method comprising the step of placing in the vicinity of the plant an effective quantity of a *Klebsiella pneumoniae* bacterial strain.

9. The method of Claim 8 wherein the plant is either a cereal grass plant or a legume plant.

10. A method for enhancing the growth of a plant other than a legume plant, the method comprising the step of placing in the vicinity of the plant an effective quantity of a *Pantoea agglomerans* bacterial strain.

11. A seed from a cereal grass plant coated with an effective quantity of bacteria to enhance growth, the bacteria selected from *Herbaspirillum seropedicae* 2A (ATCC No. PTA-2742), *Pantoea agglomerans* P101 (ATCC No. PTA 2744), *Pantoea agglomerans* P102 (ATCC No. PTA 2740), *Klebsiella pneumoniae* 342 (ATCC No. PTA-2743), *Klebsiella pneumoniae* zmvsy (ATCC No. PTA-2741), *Herbaspirillum seropedicae* Z152 (ATCC No. 35894), *Gluconacetobacter diazotrophicus* PA15 (ATCC No. 49037) and mutant strains derived therefrom.

12. The seed of Claim 11 wherein the coating also includes a carrier for the bacteria.

13. A method for identifying *Pantoea agglomerans* and *Klebsiella pneumoniae* bacterial strains having the ability to enhance the growth of a cereal grass plant, said method comprising the steps of:

isolating a bacterial isolate wherein the isolate is either a *Pantoea agglomerans* bacterial strain or a *Klebsiella pneumoniae* bacterial strain;

planting a cereal grass seed or a cereal grass seedling with said test material in a planting medium;

growing said planted cereal grass seed or said cereal grass seedling for a time sufficient to allow for a growing seedling to develop and be evaluated for growth enhancement; and

evaluating the growing seedling for evidence of enhanced growth when compared to a growing seedling grown in the absence of the test material.

14. An inoculum for application to plants, the inoculum comprising a carrier and an effective quantity of bacteria wherein the bacteria is identified according to the method of Claim 13.

